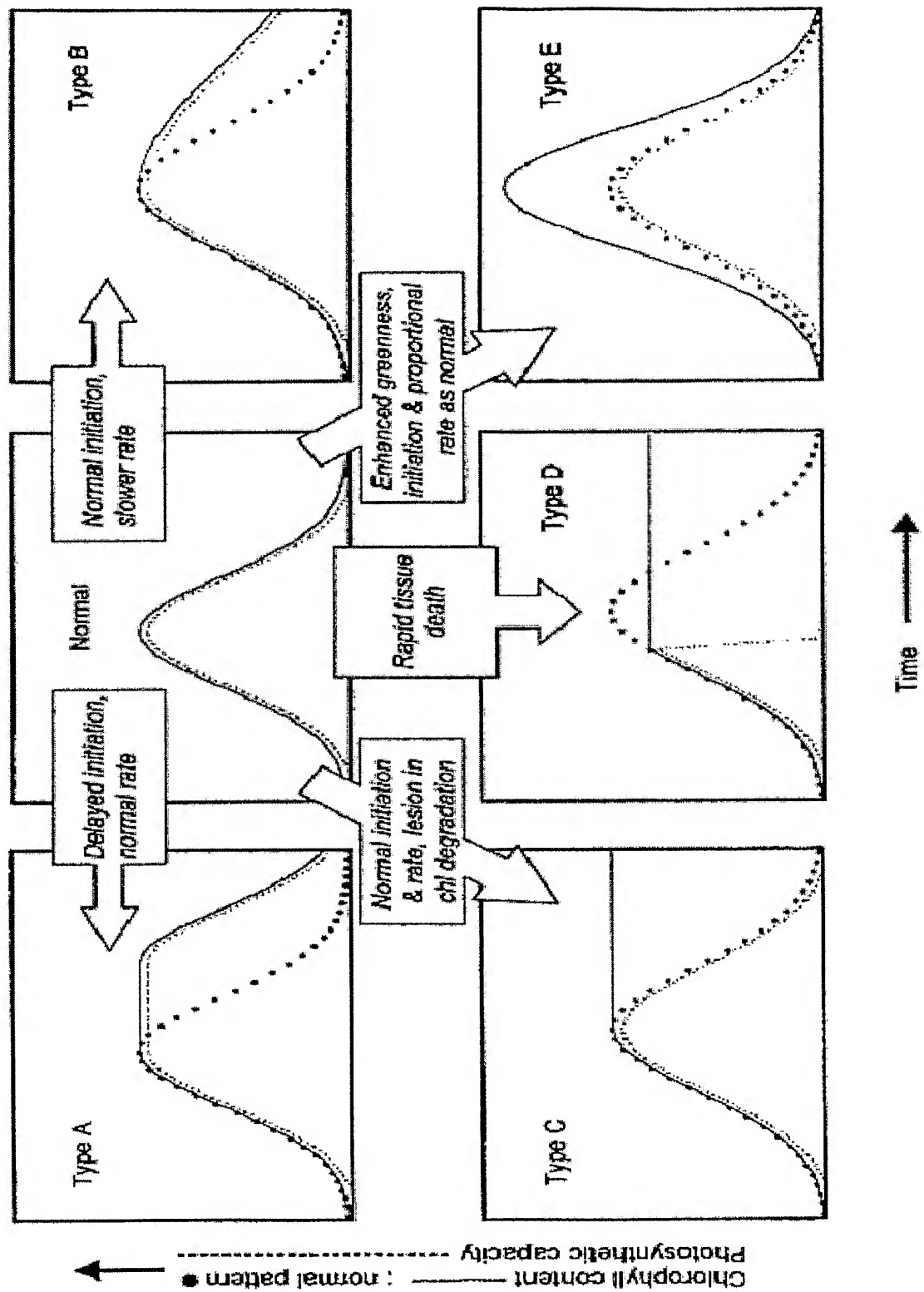


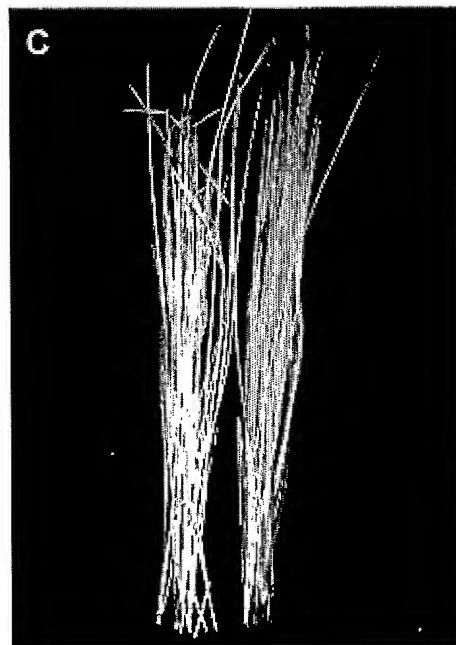
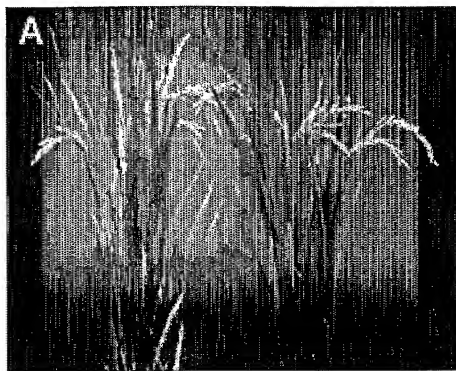
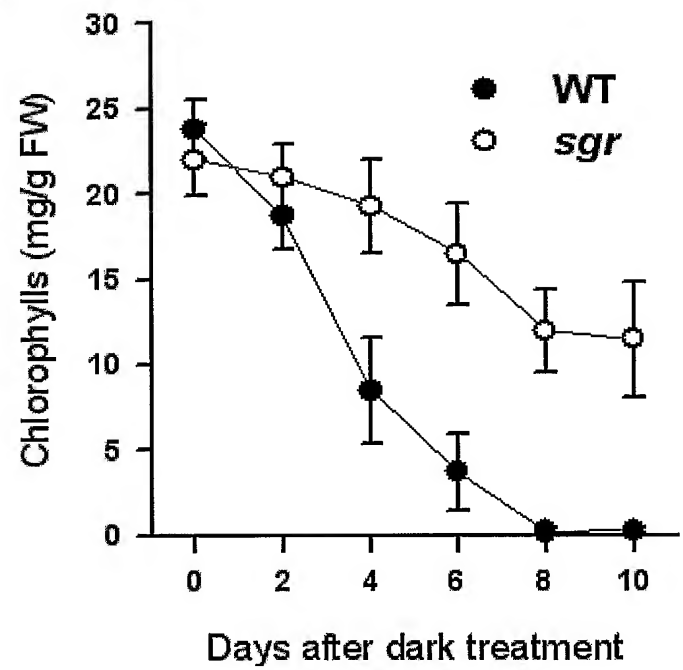
1/21

FIG. 1



2/21

FIG. 2

**D**

3/21
FIG. 3

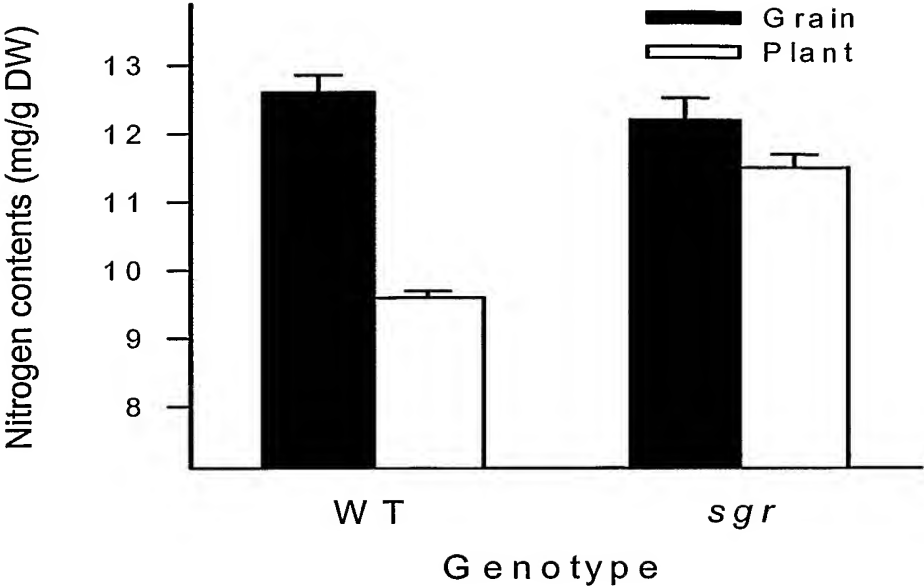
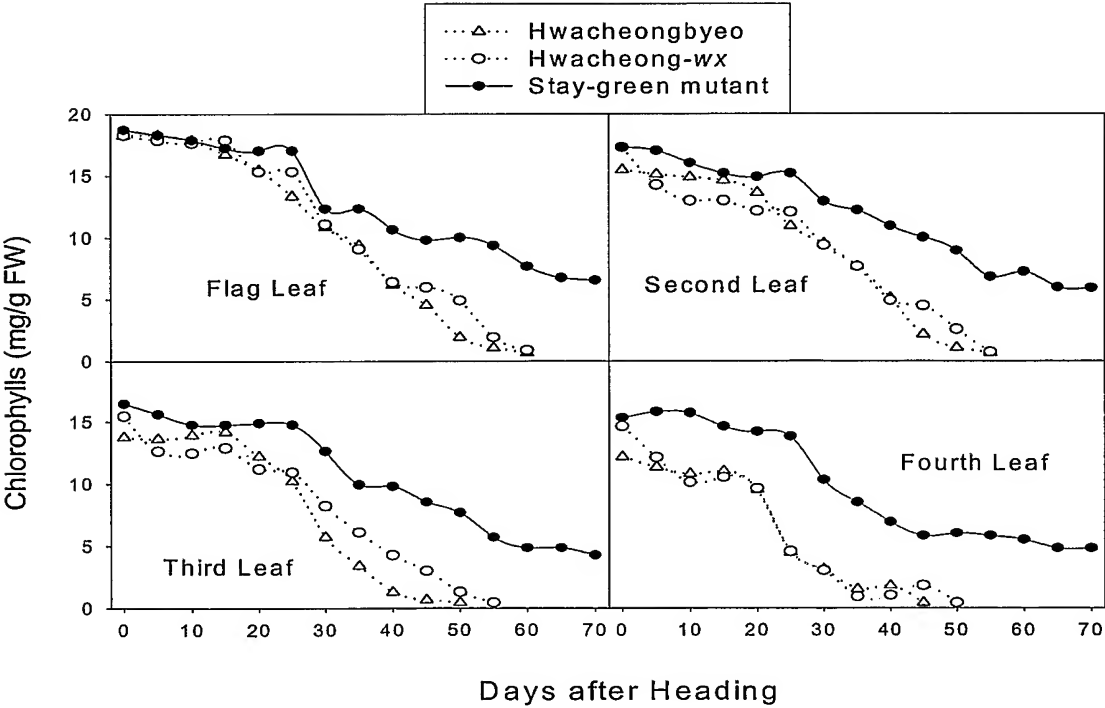
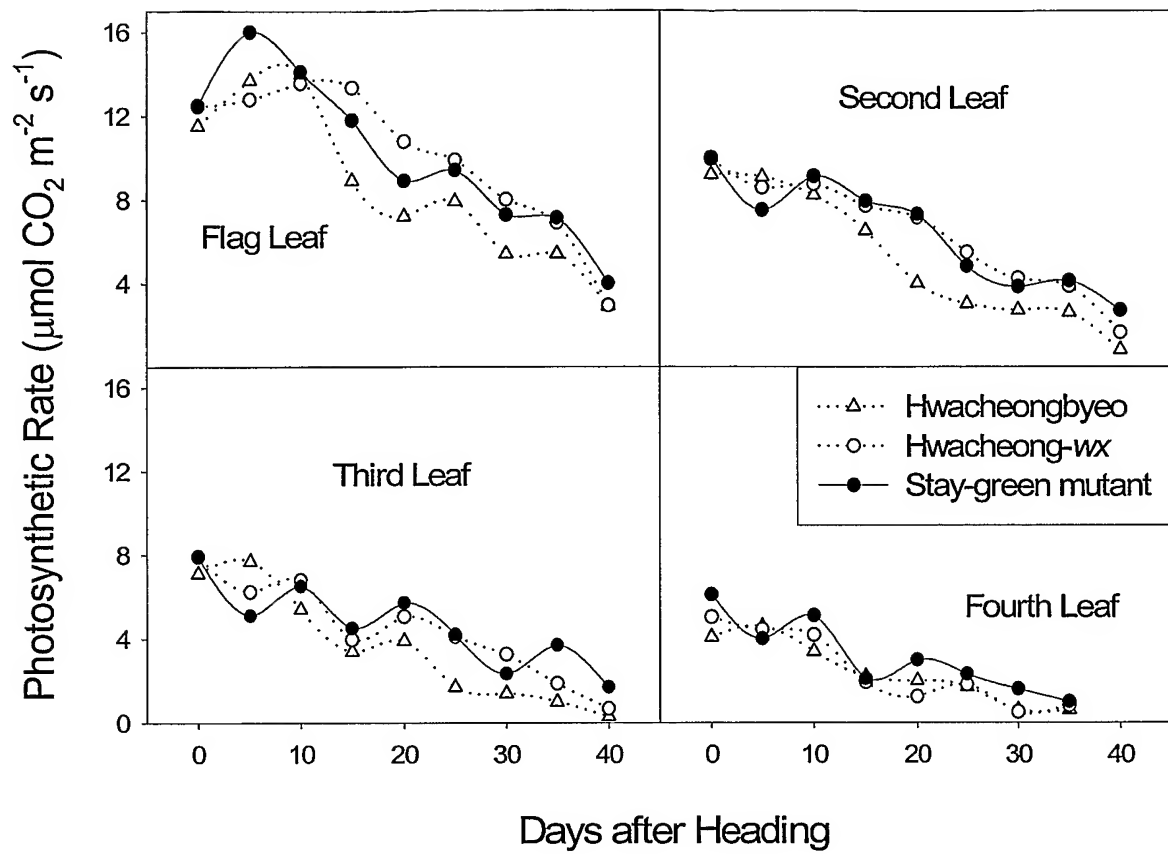


FIG. 4

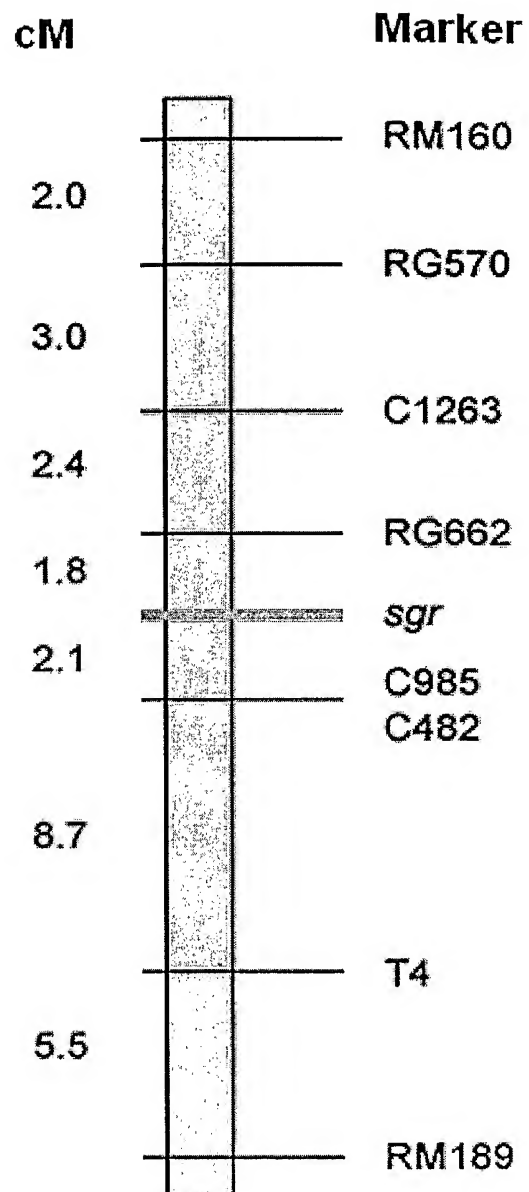


4/21

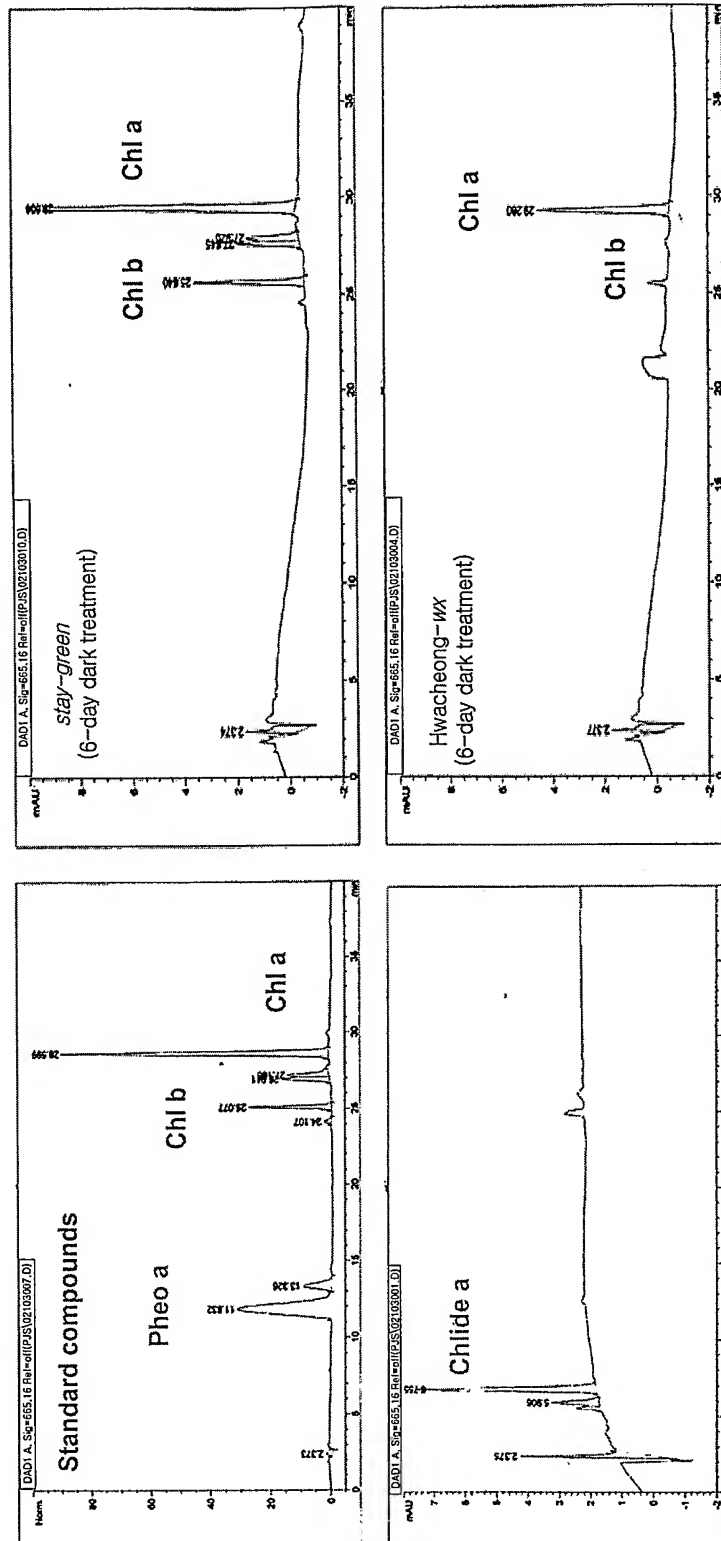
FIG. 5



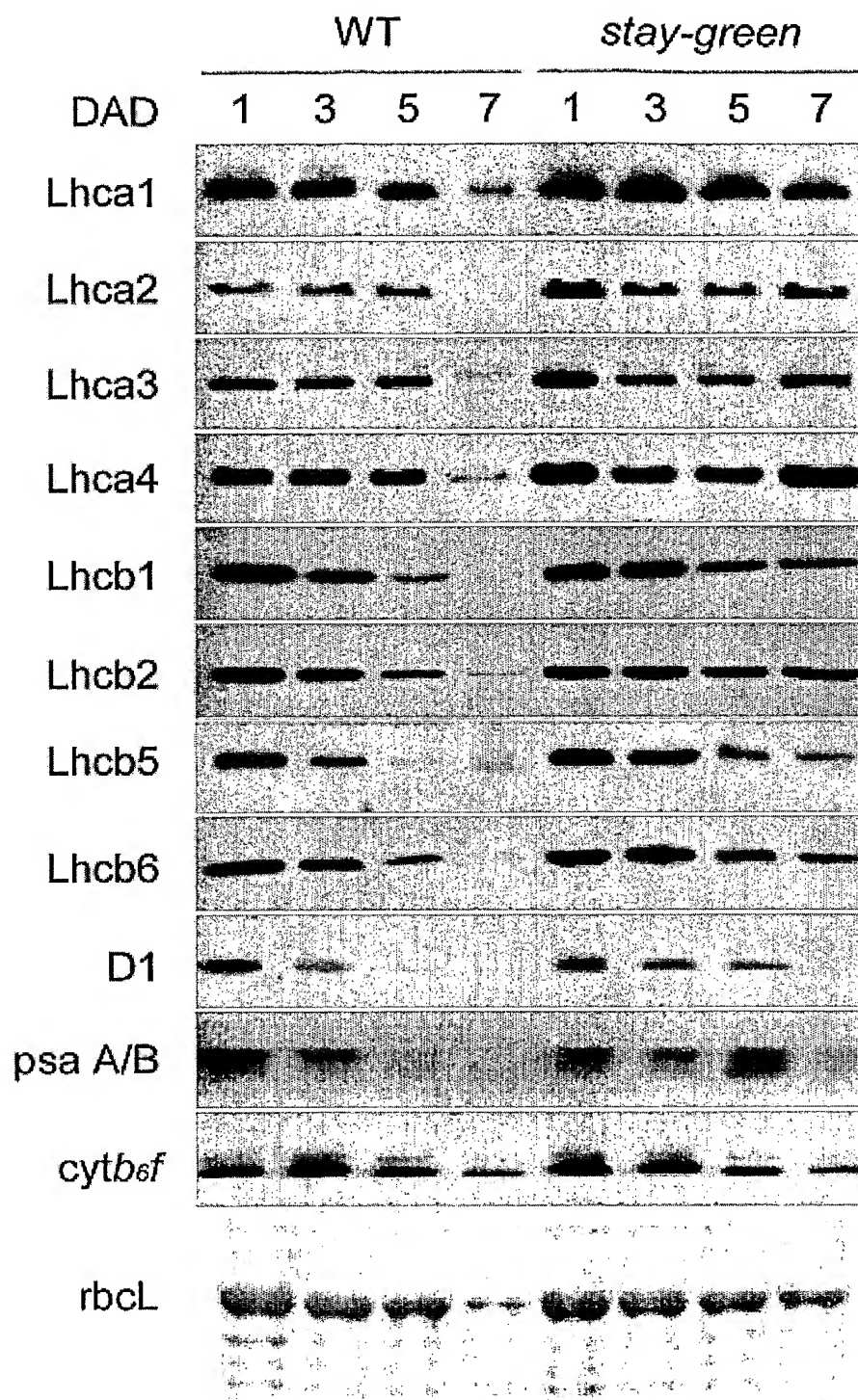
5/21
FIG. 6



6/21
FIG. 7

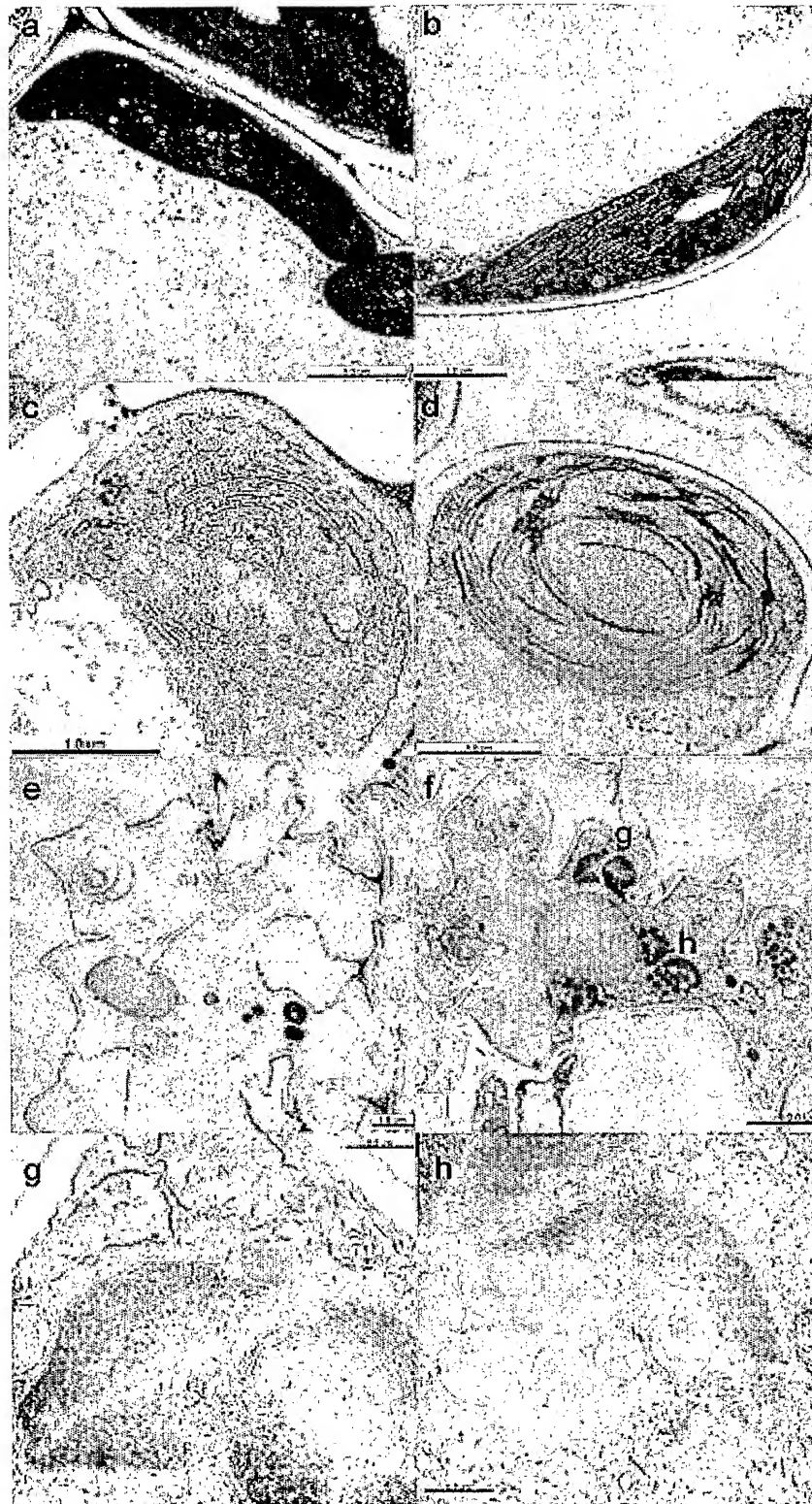


HPLC Running Time (min)

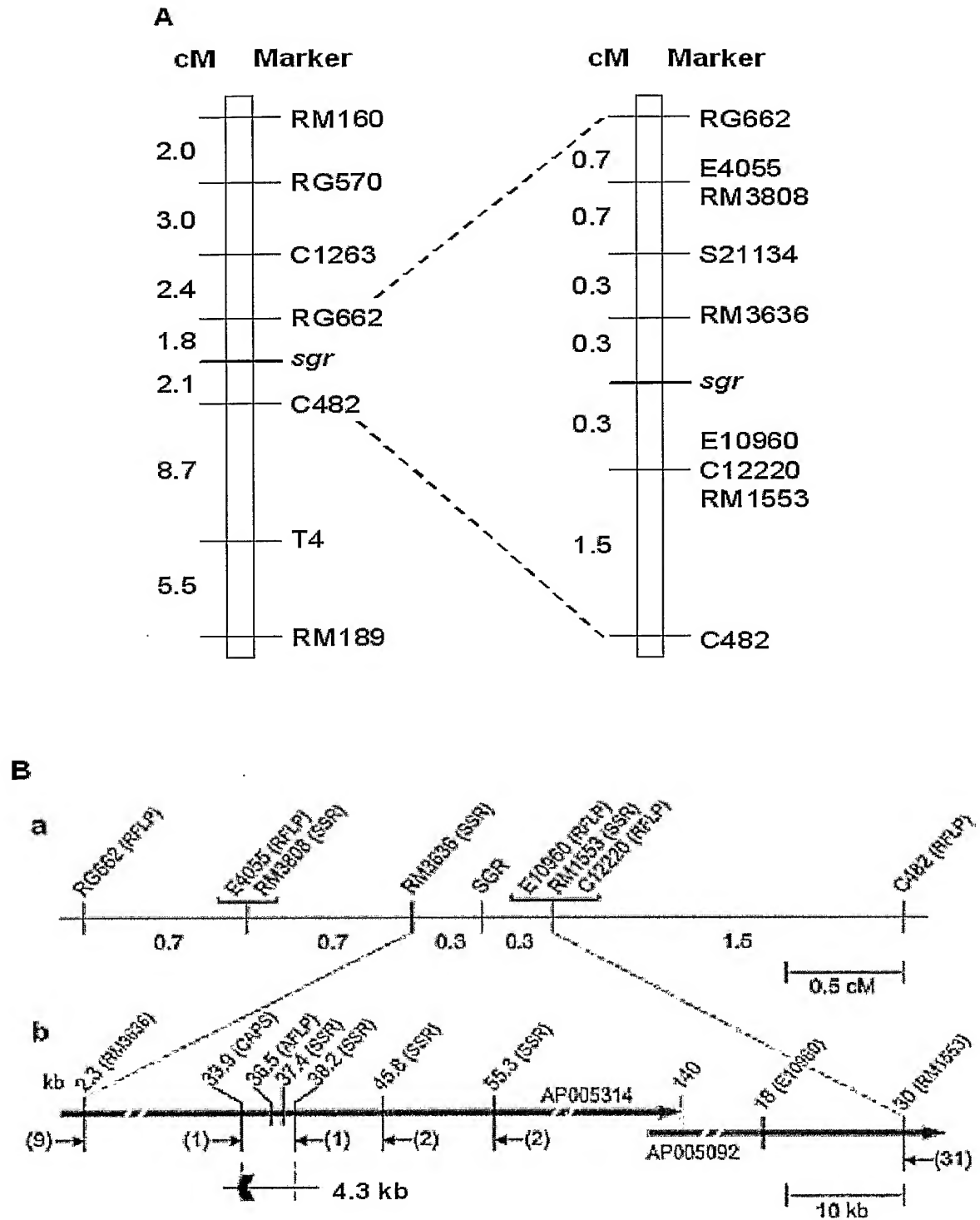
7/21
FIG. 8

8/21

FIG. 9



9/21
FIG. 10



10/21

FIG. 11

AP005314	289	ctggcgggtgtcgcacaccatcaaccggg'gcagctgcagggggtggtacaacaagctgcag	348
<i>sgr</i>	171	ctggcggatgtcgcacaccatcaaccggg'gcagctgcagggggtggtacaacaagctgcag	230
AP005314	289	ctggcgggtgtcgcacaccatcaaccggg'gcagctgcagggggtggtacaacaagctgcag	348
<i>sgr</i> F ₂ (844)	170	ctggcggatgtcgcacaccatcaaccggg'gcagctgcagggggtggtacaacaagctgcag	229
AP005314	289	ctggcgggtgtcgcacaccatcaaccggg'gcagctgcagggggtggtacaacaagctgcag	348
Hwacheong-wx	585	ctggcgggtgtcgcacaccatcaaccggg'gcagctgcagggggtggtacaacaagctgcag	526
(japonica)			
AP005314	289	ctggcgggtgtcgcacaccatcaaccggg'gcagctgcagggggtggtacaacaagctgcag	348
Milyang23	180	ctggcgggtgtcgcacaccatcaaccggg'gcagctgcagggggtggtacaacaagctgcag	239
(indica)			

FIG. 12

```

1  MAAATS TMSLLPFI TQQRWHAADSLVVLASRCHNSRRRRRCRYVVPRAR 50
    chloroplast-targeting
    signal peptide
                                     (gtg)
51  LFGPAIFEASKLKVLFLGVDEEKHQHPGKLPRTYTLTHSDVTARLTLAVS 100
                                     M
                                     (atg)
                                     (missense mutation)

101 HTINRAQLQGWNKLQRDEVVAEWKKVQGHMSLHVHCHISGGHVLLDLIA 150

151 GLRYYIFRKELE VVLKAFVHGDGNLFSRHPELEEATVWVYFHSNLPRFNR 200

201 VECWGPLRDAGAPPEEDDAVAAAAAEEAAAEQMPAAGEWPRRCPGQCDC 250

251 EPPYSLIPWPHOHHDVAAADGPOO 274

```

11/21

FIG. 13

Darkness (days)

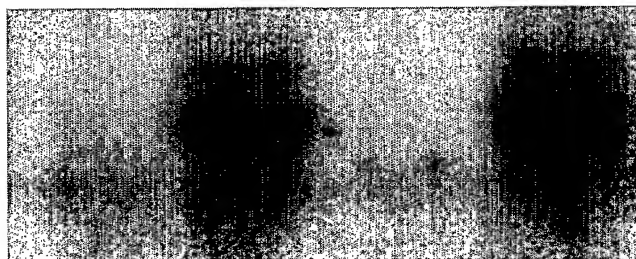
0 2 4 6 8



FIG. 14

2-d dark treatment

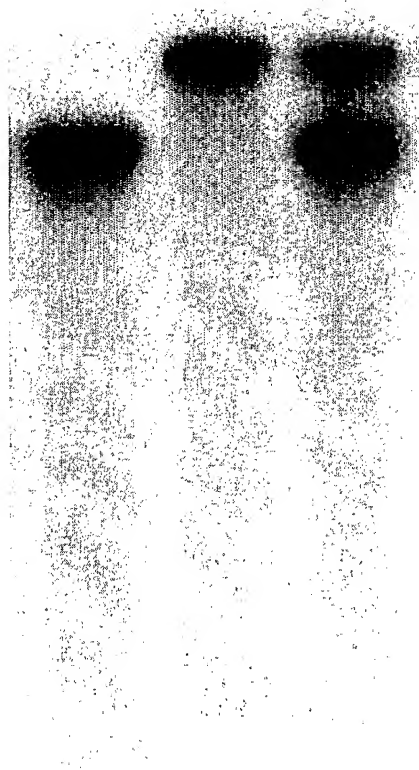
control	H ₂ O	6-BA (100μM)	ethephon (150μM)



12/21

FIG. 15

<i>sgr</i>	M23	F ₁
J	I	H



13/21
FIG. 16

Rice	MAAATSTMSLLPPIEQQQ--RWHAADSLV-VLASRCHNSRRRRRCRYVVPARLFG
Maize1	MAAAASTMSLLP-ISQPRKQQQQGAGAVV-VFQRRPWDARRRR---YVVPARLFG
Sorghum	MAAATAAAASTMSLLP-ISQLR-QQOHGAGAVV-VFRRRARDARRRR---YVVPARLFG
Maize2	MAAATAAAASTMSLLP-ISQLR--QQHGAG---AMRRRPWVARRRR---YVVPARLFG
Barley	MAIAAAAGASTMSLLP-ISHLKQLQLORRRAR----PGRVLVLGRRR--RHVVPRARLFG
Wheat1	MATASTMSLLP-ISHLKQMQQRRTRLAGALPGKVLVLGRRR--RHVVPRARLFG
Wheat2	MATASTMSLLP-ISHLKQMQQRRTRLAGALPGKVLVLGRRR--RHVVPRARLFG

Rice	PAIFEASKLKVLFLGVDEE---KHQHPG-----KLPRTYTLTHSDVTARLTLAVS
Maize1	PAIFEASKLKVLFLGVDEGSS-KHLHAHHPAP----APLLPRTYTLTHSDVTASLTLAVS
Sorghum	PAIFEASKLKVLFLGVDEESNNKHGHPTTPSPPTSPPLPLPRTYTLTHSDVTASLTLAVS
Maize2	PAIFEASKLKVLFLGVDEAGSKQHGP-----LPRTYTLTHSDVTARLTLAVS
Barley	PAIFEASKLKVLFLGVDEE---KHHPG-----KLPRTYTLTHSDVTARLTLAVS
Wheat1	PAIFEASKLKVLFLGVDEE---KHHPG-----KLPRTYTLTHSDVTARLTLAVS
Wheat2	PAIFEASKLKVLFLGVDEE---KHHPG-----KLPRTYTLTHSDVTARLTLAVS

Rice	HTINRAQLQGWNKLQORDEVVAEWKKVQGHMSLVHCHISGGHVLLDLIAGLRYYIFRKE
Maize1	HTINRAQLQGWNRLQORDEVVAEWKKVRCRMSLVHCHISGGHLLDLIAGLRYYIFRKE
Sorghum	HTINRAQLQGWNRLQORDEVVAEWKKVRCRMSLVH-----
Maize2	HTINRAQLQGWNRLQORDEVVAEWKKVRCRMSLVHCHISGGHFLLDLIAGLRYVIFRKE
Barley	HTIHAAQLQGWNRLQORDEVVAEWKKVQGHMSLVHCHISGGHFLLDLIAPLRYYIFRKE
Wheat1	HTIHAAQLQGWNRLQORDEVVAEWKKVQGHMSLVHCHISGGHFLLDLIAPLRYYIFRKE
Wheat2	HTIHAAQLQGWNRLQORDEVVAEWKKVQGHMSLVHCHISGGHFLLDLIAPLRYYIFRKE

Rice	LPVVLKAFVHGDGNLFSRHPELEEATVWVYFHSNLPFRNVECWGPLRDAGAP-PEEDDA
Maize1	LPVVLKAFVHGDGDLFSRHPELEEATVWVYFHSNLARFNVECWGPLRDAAAPAPAEDDS
Sorghum	----LKAFVHGDGDLFSRHPELEEAPVWVYFHSNLARFNVECWGPLRDAAAP-PAEDDS
Maize2	LPVVLKAFVHGDGDLFSRHPELEEATVWVYFHSNLARFNVECWGPLRDAAAP--AEDDS
Barley	LSVVLKAFVHGDGSLFSRHPELEEATVWVYFHSNNPNFNVECWGPLSDAAAPYDDEAAV
Wheat1	LPVVLKAFVHGDGSLFSRHPELEEATVWVYFHSNNPNFNVECWGPLREAAAPYDNKTPT
Wheat2	LPVVLKAFVHGDGSLFSRHPELEEATVWVYFHSNNPNFNVECWGPLAMPRA-LDDETPR

Rice	VAAAAAE-AAAEOMPAGEWPRRCPG-----QCDCCFPFSLIPWPQHDMAAADG-
Maize1	TAPAAASI-AMEGOMP-VGEWPHRCPO-----QCDCCFPFSLIPWPNEQDMAAAAG-
Sorghum	TAPAAAS--NKDGOMPPVGEWPRRCPO-----QCDCCFPFSLIPWPNERDMAAAAD
Maize2	TAPPDASINSKEAGOMMAGEWPHRCPO-----QCGCCFPFSLIPWPNEHDMAAADAS
Barley	DSPAADAAMAATAVNTADEQATRAGOWPRRCPGQCDCCFPPECLIPWPHEHMAADAG-
Wheat1	RPCPOGDAGDKKAMDRAAPR-GSRGME-----CFSRPNPIPGP-RIQMPPPR--
Wheat2	DSHRRRTVPLHDDSRRAASAPGAPALD-----GVF-QNAIPG--ADPLAANR--

Rice	-----QPQQ	274
Maize1	-----QVRQQ	281
Sorghum	ASSAAGQAQQQ	266
Maize2	-----GSAQQQ	274
Barley	-----QAPFQ	281
Wheat1	-----QAPQ	266
Wheat2	-----QSPQ	264

14/21
FIG. 17

Soybean1
Soybean2
M. truncatula
Grape
Orange
Poplar1
Poplar2
Lettuce
Potato
Iceplant
Arabidopsis1
Arabidopsis2

```

MCTLTTVP--VLPSKLNKPSLS---PHHNSLFPYCYGR--VGKKNKAMVPVARLFGPAIFEASKLKVFLFLGVDEKNKHP
MGTLTTVP--VLPSKLNKPSLS---PRHNSLFPYCYGR--VGKKNKAMVPVARLFGPAIFEASKLKVFLFLGVDEKNKHP
MGTLTTAPPPMLTSKFPKPSFS--POHKPLFPNRR--RWKKNGQISVPVARLFGPAIFEASKLKVFLFLGVDEKDKHP
MATLTAAL--VLPSLNKPSFS--QHQSSEFCR--RR--PKKSNDAFP--ZARLFGPAIFEASKLKVFLFLGVDEKKHP
MASLVAAL--GLPSKLKASPY--EQNSLFFVSR--RR--SKKKNQSFAPVARLFGPAIFEASKLKVFLFLGVDEKHP
MGSALAP--FLPSKLRPSIL---DQNSLFFPSK--KK--LKKKNQISVPVARLFGPAIFEASKLKVFLFLGVDEKKHP
MGSALAP--FLPSKLRPSIL---DQHSLSFPS--TK--LKKKNQISVPVARLFGPSIFEASKLKVFLFLGVDEKHP
---MASL--ILPTKONPPSSSFLHONHNNPFTNKR--KLKKNQISVPVARLFGPSIFEASKLKVFLFLGVDEKKHP
MGTLTASL--VPSKLNKPSLS---NEKQSLFVHKTR--SKKKNQISVPVARLFGPAIFEASKLKVFLFLGVDEKHP
MGTLTASL--LLPSKLKPS---VFEDQSSVYFKRSRGLPKLNKAKFSVPVMRFGPAIFEASKLKVFLFLGVDEKHP
MCSLSAIM--LLPKLKPAYSKRNSSSSSSLFFNNRR--SKKKNQISVPVARLFGPAIFEASKLKVFLFLGVDEKKHP
MCSLATNL--LLPSKMKPVFPEKLS---TSSLCVTTR--SKKKNQISVPVARLFGPAIFEASKLKVFLFLGVDEKKHP

```

Soybean1
Soybean2
M.truncatula
Grape
Orange
Poplar1
Poplar2
Lettuce
Potato
Iceplant
Arabidopsis1
Arabidopsis2

CNLPRPTYTLTHSDITA	KLTLIAISQITINNSQLQGWYNRL	QRDEVVAQWKKVKGKMSLVHCHISGGHFLLD	LARLRYFIF
CNLPRPTYTLTHSDITA	KLTLIAISQITINNSQLQGWYNRL	QRDEVVAQWKKVKGKMSLVHCHISGGHFLLD	LARLRYFIF
CNLPRPTYTLTHSDITA	KLTLIAISQITINNSQLQGWYNRL	QRDEVVAQWKKVKGKMSLVHCHISGGHFLLD	LARLRYFIF
GKLPRTYTLTHSDITS	KLTLIAISQITINNSQLQGWYNRL	QRDEVVAQWKKVKGDQMSLVHCHISGGHFLLD	QAKLRVYFIF
SKLPRTYTLTHSDITS	KLTLIAISQITINNSQLQGWYNRL	QRDEVVAEWKKVKGKMSLVHCHISGGHFLLD	CARLREFFIF
CNLPRPTYTLTHSDITA	KLTLIAISQITINNSQLQGWYNRL	QRDEVVAEWKKVKGKMSLVHCHISGGHFLLD	CCRLRYFIF
CNLPRPTYTLTHSDITA	KLTLIAISQITINNSQLQGWYNRL	QRDEVVAEWKKVKGKMSLVHCHISGGHFLLD	CCRLRYFIF
GKLPRTYTLTHSDITS	KLTLIAISQITINNSQLQGWYNRL	QRDEVVAEWKKVKGKMSLVHCHISGGHFLLD	CARLREFFIF
GKLPRTYTLTHSDITS	KLTLIAISQITINNSQLQGWYNRL	QRDEVVAEWKKVKGKMSLVHCHISGGHFLLD	PARLRNRYF
GKLPRTYTLTHSDITS	KLTLIAISQITINNSQLQGWYNRL	QRDEVVAEWKKVKGKMSLVHCHISGGHFLLD	PAKLRVYFIF
STLPRTYTLTHSDITA	KLTLIAISQITINNSQLQGWYNRL	QRDEVVAEWKKVKGKMSLVHCHISGGHFLLD	PAKFRYFIF
AKLPRTYTLTHSDITA	KLTLIAISQITINNSQLQGWYNRL	QRDEVVAEWKKVKGKMSLVHCHISGGHFLLD	PAKLRVYFIF

Soybean1
Soybean2
M.truncatula
Grape
Orange
Poplar1
Poplar2
Lettuce
Potato
Iceplant
Arabidopsis1
Arabidopsis2

[illegible]

Soybean1
Soybean2
M.truncatula
Grape
Orange
Poplar1
Poplar2
Lettuce
Potato
Iceplant
Arabidopsis1
Arabidopsis2

```
--GLAIP-QPCQ-BECQCCFPPLTSLSIQWSKVQPSRHY--EPCDGIGTQOQL 261
KEQLALP-QPCQ-BECECCFPPLTSLSIQWSQVPSHHY--EPCDGIGTQOQL 271
HQNLALP-BPCQ-BTCECCFPPLTSLSPMCPSENVHNDY--EPIDGITEQSL 263
SSKWERP-BPCM-BNCTCCFPPLSLIPWSODLAHENIHD-----TKKGLOOQT 274
ISNWELP-BPCQ-BTCNCCFPPLSLIPWSEKLPLQTNR--GTGQESLQOQTR 270
ATDANLP-BPCQ-BNCQCCFPPLSLIPSEMPQENKN--PSTQOT-FQQAQQP 261
SSNWALP-BPCQBNCSCCFPPMSLIPWSKMVPLEDKNN--PSTPQ-LOQP 270
SSNWETP-KPCL-BACACCFPPMSSIPWSHDLVNQDDDD--DGATHGLOOKA 280
NNKWELP-KPCE-BACACCFPPMSSIPWSNLNDIGEE--NGTIDGLOQAQS 272
DNELETP-BTCK-BECTCCFPPLSLIPWSHLSQSGDDLHL-SGGTHGLESQOQQT 286
-KTETLPEARCA-DESCCFPTVSSIPWSHSLISNEGVNGYSGTQTEGIATPPEKL 268
KKSETLPELCP-DECKCCFPPTSTIPWSHRHYQHTAADEN-VADGLELPPNGKSKG 271
```

15/21

FIG. 18

Rice	MAAATSTMSL-----LPEITQQQRWHAADSLVVLASRCHN
Orange	MASLVAALG-----LPSKLKASPYEQQNALFVSRR----
Pine	MAVARISAGKTQHCYSFSPSDVRISSAPQNSQSQFKRKSKIKLSSRFLAS

Rice	-----SRRRRRCRYVVR-----ARLFGPAIFEASKLKVL
Orange	-----RSKKKNQSFAP-----VARLFGPAIFEASKLKVL
Pine	ESSWNGLVAHQLQCNNRHRTNSSFPRSTSRVVARLFGPAIFQASKLKVL

Rice	LGVDEEKHHPGKLPRTYTLTHSDVTARLTAVSHNTINRAQLQGWYNKLO
Orange	LGVDEEK--HPGKLPRTYTLTHSDITSKLTLAITSQTINNSQLQGWYNRLQ
Pine	LGTHEEK--HPAHLPRTYTLTHSDITAKLTAFSQTINKD--QGWYNRLQ

Rice	RDEVVAEWKKVQGHMSLVHCHISGGHVLLDLIAGLRXYIFRKELPVVLK
Orange	RDEVVAEWKKVKGKMSLVHCHISGGHLLDICARLRFFIFSKELPVVLK
Pine	RDEVLAQWKKSQGKMSLVHCHISGGHLLDAIARLRFYIFRKELPVVLE

Rice	AFVHGDGNLFSRHPELEEATVWVYFHSNIPRFNRVECWGPLRDAGAPPEE
Orange	AFVHGDGNLLNNHPELQEALVWVYFHSNIPFNFNVECWGPKLKEAVAGSSE
Pine	AFRHGDRAALLEKHPELETALVWVYFHSNVKEFKRVECWGSLAEACKGAPS

Rice	DDAVAAAAAEEAAAEQMPAAGEWPRRCPGQCDCCFPFMSLIPW----PHQ
Orange	----AGCTRHEIRQETSISNWELEPCQETCNCCFPFMSLIPWSEKLPLQ
Pine	-----NLNKELDELGGKLEMPSHCAEPCSCCFPFMSVLLR----PED

Rice	HDVAAADGQ---PQQ	274
Orange	TENRGTOGQESLQQQTR	271
Pine	VEQFS	290

16/21

FIG. 19

Arabidopsis1	-----MCSLSAHM-----LLE-----TKLKPAYSDK-----RSNSSSSSLFFNNRR-----SKKKNQSLVF-----VA
Arabidopsis2	-----MCSLAHLNL-----LLE-----SKKRPVFPPEK-----LS-----TSLCVTTTR-----SKMKNRSLVF-----VA
Lettuce	-----MASL-----LLE-----TKONPPSSSF-----LHONHONNPFETNKR-----KLKKNQALVF-----VA
Potato	-----MGSLTASL-----VLP-----SKM-----NEKQSSSLFVHTTR-----SKKKNQSLVF-----VA
Iceplant	-----MGSLTASL-----LLE-----SKLSPS-----VFEDQSSSLFKSQRGL-----PKLNRKKSFSF-----VM
Soybean1	-----MGSLTTPP-----VLP-----SKLNKPSLS-----PHHNSLSPYCGRR-----VGKKNKAMVP-----VA
Soybean2	-----MGSLTTPP-----VLP-----SKLNKPSLS-----PHHNSLSPYCGRR-----VGKKNKAMVP-----VA
M. truncatula	-----MGSLTTPP-----MLT-----SKF-----KPSFS-----PQHKLPLSPNR-----RR-----LWKKNQSLVF-----VA
Grape	-----MAELTAAL-----VLP-----SEL-----KPSFS-----OQSSSLFVCR-----RR-----PKSNPAFP-----AA
Orange	-----MAELVAAL-----GLP-----SKL-----KASPY-----EQQNALFVSR-----RR-----SKKKNQSFAP-----VA
Poplar1	-----MGSLAIP-----LLE-----SKL-----RPSIL-----DQNSLSPSPK-----KN-----LKRKNQSLSP-----VA
Poplar2	-----MGSLAIP-----LLE-----SKL-----RPSIL-----DQNSLSPSPK-----KN-----LKRKNQSLSP-----VA
Pine	-----MAVARISAGKTQHCYSFSE-----SDVRISSAPONSQSQFKRSKIKLSSRRPLASESSWNGLVLAHQLCNNRHRTSSSFPRTSRVVA-----VA
Maize1	-----MAAATAASTMS-----LLE-----ISQPRKQOQOQAGAVV-----VFORRRPDAARRR-----YVVP-----TA
Sorghum	MAAATAAATASTMS-----LLE-----ISQPRKQOQOQAGAVV-----VFORRRPDAARRR-----YVVP-----TA
Maize2	-----MAAATAASTMS-----LLE-----ISQPRKQOQOQAGAVV-----VFORRRPDAARRR-----YVVP-----TA
Rice	-----MAAATASTMS-----LLE-----ISQPRKQOQOQAGAVV-----VFORRRPDAARRR-----YVVP-----TA
Wheat1	-----MAAATASTMS-----LLE-----ISQPRKQOQOQAGAVV-----VFORRRPDAARRR-----YVVP-----TA
Wheat2	-----MAAATASTMS-----LLE-----ISQPRKQOQOQAGAVV-----VFORRRPDAARRR-----YVVP-----TA
Barley	MAIAAATASTMS-----LLE-----ISQPRKQOQOQAGAVV-----VFORRRPDAARRR-----YVVP-----TA
Arabidopsis1	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Arabidopsis2	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Lettuce	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Potato	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Iceplant	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Soybean1	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Soybean2	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
M. truncatula	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Grape	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Orange	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Poplar1	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Poplar2	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Pine	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Maize1	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Sorghum	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Maize2	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Rice	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Wheat1	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Wheat2	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Barley	RLFGPAIFEASKLKVFLGVDEK-----KHPS-----TLPRTYTLTHSDITAKTLTALISQINNSLOQGWANRLRDEVVAEWKK
Arabidopsis1	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Arabidopsis2	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Lettuce	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Potato	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Iceplant	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Soybean1	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Soybean2	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
M. truncatula	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Grape	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Orange	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Poplar1	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Poplar2	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Pine	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Maize1	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Sorghum	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Maize2	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Rice	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Wheat1	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Wheat2	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Barley	VKGKMSLVHCHISGGHFLDLCAFLRYIFIKELPVVLKAFVHGDGDLNNYPELOEALVWVYFHSNNPEFNKVECWGPLKEAVSE---
Arabidopsis1	-DGH-----KTETLPEAR-----CA-----DGGSCCFPPVSSIPWSHS-LSNEGNGVSGTGTESATNPKEKL-----
Arabidopsis2	-HQHGRTHKKSETLPELP-----CP-----DGGSCCFPPVSSIPWSHS-HYQHTAADEN-VADGLLEIPNPGKSKG-----
Lettuce	TTSSSSSSSLSESTIAEAGEGSSNNWEPF-----KPCL-----EACACCFPPVSSIPWSHDLVKNQDDD-DGATHGQOQKA-----
Potato	--SSSSSGVGKSTSTSTSNNNKMBEPF-----KPCE-----EACACCFPPVSSIPWSHDLVKNQDDD-DGATHGQOQKA-----
Iceplant	KNKNKNKDKFLSKFEEDSDPNLEBP-----ETCK-----EPCGCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Soybean1	GVQEE-----GLAP-----QPCQ-----EBCGCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Soybean2	GAKES-----EQETLLSKEGLAP-----QPCQ-----EBCGCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
M. truncatula	GTQRD-----HQNLTP-----EPCQ-----EBCGCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Grape	PAAGGGGGRVEAHQDMRQVEPSSKTEPEPCM-----EBCGCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Orange	EAGG-----TRHEIRQETSISNWBEP-----EPCQ-----EBCGCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Poplar1	AASGG-----APENKE-----QATDNEBP-----EPCQ-----EBCGCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Poplar2	SETGG-----SNETEELANGSSNWBEP-----EPCQ-----EBCGCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Pine	-APSN-----LNKELDELGGKLEP-----SHCA-----EBCGCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Maize1	EDDSTAPAAAS-AMEGQMP-VGEWPHRCQP-----QDCCCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Sorghum	EDDSTAPAAAS-NKDGQMPVGEWPHRCQP-----QDCCCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Maize2	EDDSTAPPDASNSKAGQMMAMCEWPHRCQP-----QDCCCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Rice	EDDAVAAAAAE-AAAAQMPAAGEWPHRCGP-----QDCCCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Wheat1	KTPTRCPGQDAGDKKAMDRAAPR-GSRGME-----CFSRPNFIPGP-RIOGPPPP-----QDCCCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Wheat2	ETPRDSHRRRTVPLHDSRRAGSAPGALD-----GVF-QNAIEG-ADPPAANR-----QDCCCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----
Barley	EAAVDSPAADAAMAATAVNTAADAQATRAGQWPRRCFQDCCCFPPVSSIPWSHSALSGDDHLHSGGTHGQOQOQOQ-----

17/21

FIG. 20

Potato	MGTLTASLVVPSKLN---NEKQ----SSIFVHKTRRKSKKNQST-VPVAR
Tomato	MGTLTTSLVVPSKLN---NEQQ----SSIFTHKTRRKCKKNQST-VPVAR
Rape1	MCSLATNLLPSTMKPAFTEKON--TNSLFLTNKRSLMQNRSTVPVPVAR
Rape2	MCSLSANMLLPITKLKPAYSDKRGNSTNSLLVSNTRSK-RKNQSV-VPMAR

Potato	LFGPAIFEASKLKVLFLGVDEEKHPGKLPRTYTLTHSDITSKLTLAISQT
Tomato	LFGPAIFEASKLKVLFLGVDEEKHPGKLPRTYTLTHSDITSKLTLAISQT
Rape1	LLEPAIFEASKLKVSFLGVDEKKHPSKLPRTYTLTHSDITAKLTLAISQS
Rape2	LFGPAIFESSKLKVLFLGVDDKKHPPTLPRTYTLTHSDITAKLTLAISH (partial)

Potato	INNSQLQGWNRLQDEVVAEWKKVKGKMSLHVHCHISGGHFMLDLFARL
Tomato	INNSQLQGWNRLQDEVVAEWKKVKGKMSLHVHCHISGGHFMLDLFARL
Rape1	INNSQLQGWANRLFRDEVVAEWKKVKGKMSLHVHCHISGGHFLDLIAKL
Lotus2	(partial) DLCAKL

Potato	RNYIFCKELPVVLKAFVHGDENLLKNNPELQEALVWVYFHSNIOEFNKVE
Tomato	RNYIFCKELPVVLKAFVHGDENLLRNYPELQEALVWVYFHSNIOEFNKVE
Rape1	RYIIFCKELPVVLKAFVHGDENLLNSYPELQESPVWVY---SIQ-----
Lotus1	(partial) YPELQDALVWVYFHSKIPEFNKVO
Lotus2	RYEIFCKELPVVLKAFVHGDENLFNNYPELEESLVWVYFHSNISEFNKVE
Sugarbeet	(partial) PELQEASVWVYFHS SIPEFNKVE

Potato	CWGPLKDATSPS-SSSSGVGGVKST---SFTSNSNNKWEIPKPCEEACA
Tomato	CWGPLRDATSPS-SSSGGVGGVKST---SFTSH (partial)
Rape1	-----TSPS-TIRLNVGGRFGR---PRSTN (partial)
Lotus1	CWGPLKEAAAPSG-----GSPEKEGEGVKMPDPCPEECE
Lotus2	CWGPLKDACATS-----IG-----SYSYDKG--MPQTQPCQONCE
Sugarbeet	CWGPLTDAVDPPSKNKKRMMMINDEQDKEEEEEAASSKWEMLVPCTKPCR

Potato	CCFPP---MSVMPWPSSNLDGIGEENGTIQQGLQEQQS
Lotus1	CCFPPPPALDPIPWSEEVPSPHYEAFDGVGTRPNL
Lotus2	CCFTIP---MSSSDWIG-----TQOKL
Sugarbeet	CCFPP---TSLIPWT-----PSLSQEQQQEQQLPGDVSIPPPGTR

18/21
FIG. 21

Rice	MAAATSTMSLLPPIITQQQRWHAADSLVVLASRCHNSRRRRRCRYVVPRAR
Rice	LFGPAIFEASKLKVLFLGVDEEKHQHPGKLPR
Zoysia	(partial) TYTLTHSDVTAKLTLAVS
Rice	HTINRAQLQGWNKRLQDEVVAEWKKVQGHMSLVHCHISGGHVLLDLIA
Zoysia	HTIHAAQLQGWNRLQDEVVAEWRKVRGNMSLVHCHISGGHFLRDLIA
sugarcane	(partial) TRLDLIA
Rice	GLRYYIFRKELPVVLKAFVHGDGNLFSRHPELEEATVWVYFHSNLPRFNR
Zoysia	PLRYYIFRKELPVVLKAFVHGDGSLFSSHPLEEATVWVYFHSNLPRFNR
sugarcane	GLRYYIFRKELPVVLKAFVHGDGDLFSRHPELEATVWVYFHSNLTRFNR
Rice	VECWGPLRDAGAPPEEDDAVAAAAAEEAAAQMPAAAGEWPRRCPCGQCDC
Zoysia	VECWGPLCDAAAPVEEE-----GQONDDRIP-AGEWPRRCPCQCCECC
sugarcane	VECWGPLRDAAAPPAEEDS-TAPAASNSKEGOMPPVGEWPVRCPCQCDC
Rice	FPPYSLIPWPHQHDMA--AAD---GQPQQ
Zoysia	FPPHSLIPWPNEHDMMA--PTDAPAAGQTQQ
sugarcane	FPPHSLIPWPNEHDMMAAAADATAAGQAQQQ

FIG. 22

Pine	MAVARISAGKTQHCYSFSPSDVRISAPQNSQSQFKRKSILSSRFLAS
Pine	ESSWNGLVAHQLQCNNRHRRTNSSFPRSTSRVVARLFGPAIFQASKLKVL
Pine	LGTHEEKHPAHLPRITYTLTHSDITAKLTLAFSQT
Spruce	(partial) INKD--QGWNRLQRD
Pine	EVHAQWKKSQGKMSLVHCHISGGHWLLDAIARLRFYIFRKELPVVLEAF
Spruce	EVHAQWKKSQGKMSLVHCHISGGHWLLDAIARLRFYIFRKELPVVLEAF
Pine	RHGDRALEKHPLEETALVWVYFHSNVREFKRV
Spruce	RHGDRALEKHPLEETALVWVYFHSNVREFKRV
Pine	NKELD-ELDGCKLEMPSHCAEPCSCCFPPFSVLLRPEDVEQFS
Spruce	EKELDEEFNCEKLEMPSHCSEPCNCCFPFVSLLRPEDAEQFI

19/21

FIG. 23

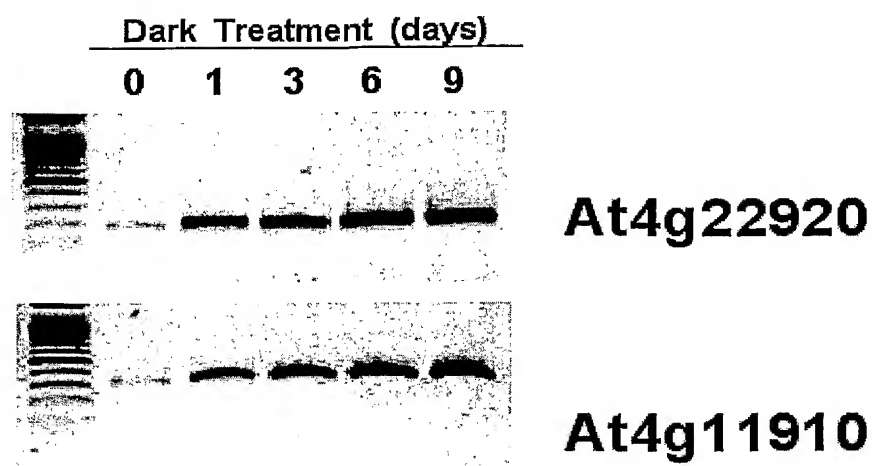
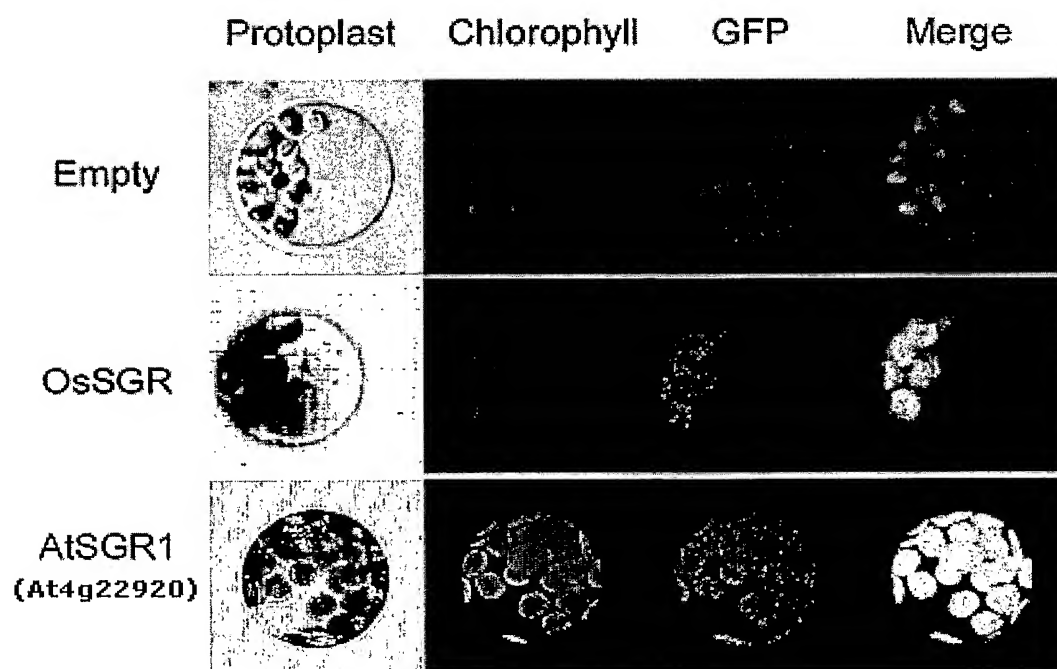
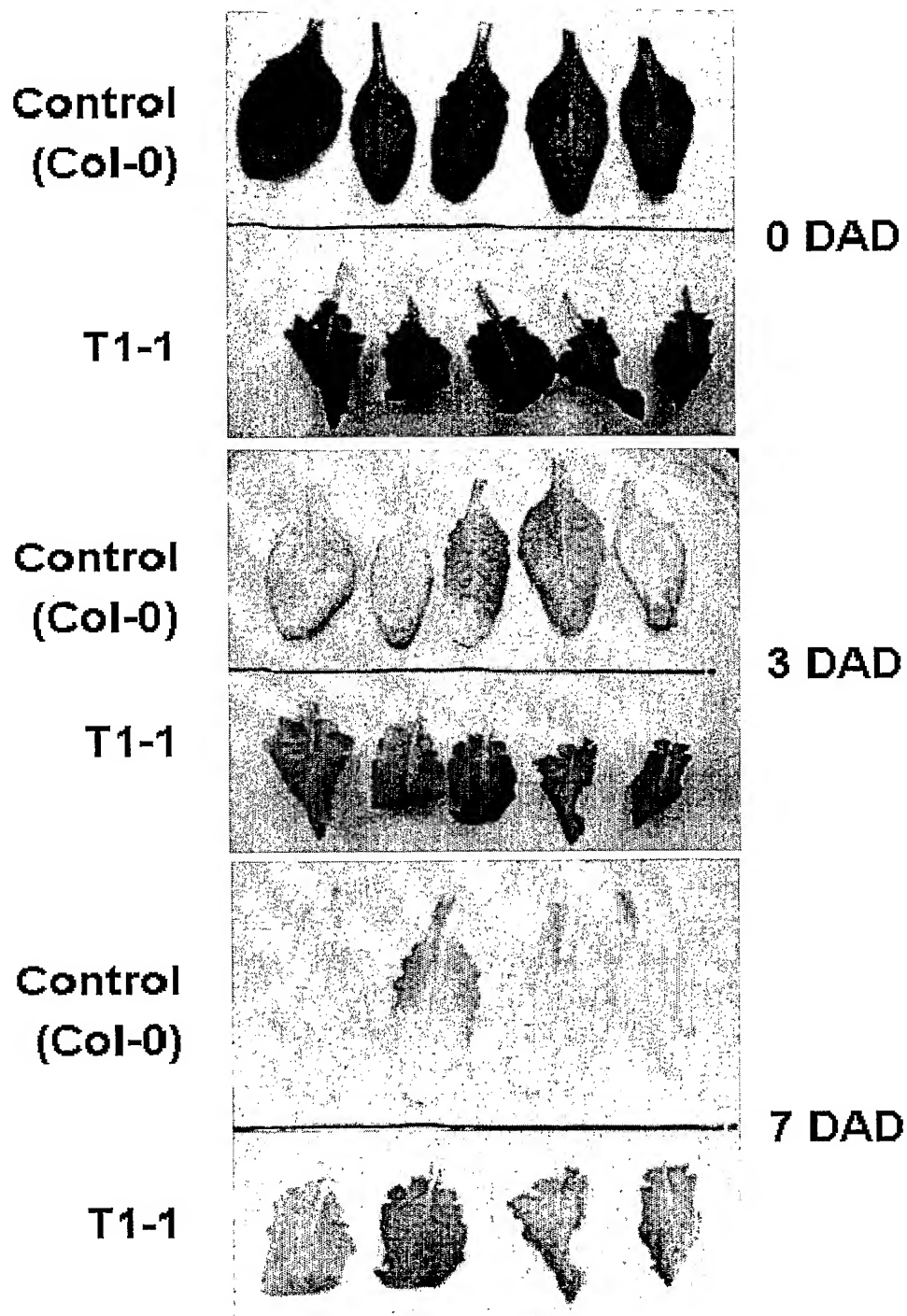


FIG. 24



20/21
FIG. 25



21/21
FIG. 26

